

carboxyl group, or an alkylsilyl or alkylsilylalkyl group having from 3 to 30 carbon atoms, and R's may be the same or different, and may be optionally bonded to each other to form a cyclic structure; a represents 0, 1 or 2; and n and m each represent an integer of at least 1.

14. (Amended) A method for producing olefin-styrene copolymers, which comprises polymerizing olefins and styrenes in the presence of the copolymerization catalyst of claim 1.

Please add new Claims 15-39.

15. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein, in (C), X is carbon, Y is oxygen and Z is aluminium.

16. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein the compound (C) is a reaction product of <1> at least one selected from compounds of a general formula, $(R^1)_3-C-OR^3$, R^4-CO-R^5 or $R^6-CO-OR^7$, with <2> a compound of a general formula, $Z(R^2)_m$. (In these formulae, R^1 , R^3 , R^4 , R^5 , R^6 and R^7 each represent a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group having from 1 to 30 carbon atoms, an aromatic hydrocarbon group having from 6 to 30 carbon atoms, an alkoxy group having from 1 to 30 carbon atoms, an aryloxy group having from 6 to 30 carbon atoms, a thioalkoxy group having from 1 to 30 carbon atoms, a thioaryloxy group having from 6 to 30 carbon atoms, an amino group, an amido group, or a carboxyl group, and R^1 , R^3 , R^4 , R^5 , R^6 and R^7 may be the same or different, and R^1 , R^3 , R^4 , R^5 , R^6 and R^7 may be optionally bonded to each other to form a cyclic structure; Z represents a metal element of Groups 2 to 13; m is an integer, indicating the valency of the metal element Z; and R^2 represents a hydrocarbon group.)

17. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein at least one of three R^1 's is an aromatic hydrocarbon group having from 6 to 30 carbon atoms.

18. (New) The catalyst as claimed in claim 5 for copolymerization of olefins and styrenes, wherein at least one of three R¹'s is an aromatic hydrocarbon group having from 6 to 30 carbon atoms.

19. (New) The catalyst as claimed in claim 6 for copolymerization of olefins and styrenes, wherein at least one of three R¹'s is an aromatic hydrocarbon group having from 6 to 30 carbon atoms.

20. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein three R¹'s are all aromatic hydrocarbon groups each having from 6 to 30 carbon atoms.

21. (New) The catalyst as claimed in claim 5 for copolymerization of olefins and styrenes, wherein three R¹'s are all aromatic hydrocarbon groups each having from 6 to 30 carbon atoms.

22. (New) The catalyst as claimed in claim 6 for copolymerization of olefins and styrenes, wherein three R¹'s are all aromatic hydrocarbon groups each having from 6 to 30 carbon atoms.

23. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein three R¹'s are all phenyl groups.

24. (New) The catalyst as claimed in claim 5 for copolymerization of olefins and styrenes, wherein three R¹'s are all phenyl groups.

25. (New) The catalyst as claimed in claim 6 for copolymerization of olefins and styrenes, wherein three R¹'s are all phenyl groups.

26. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein R² is an alkyl group having at least 2 carbon atoms.

27. (New) The catalyst as claimed in claim 5 for copolymerization of olefins and styrenes, wherein R² is an alkyl group having at least 2 carbon atoms.

28. (New) The catalyst as claimed in claim 6 for copolymerization of olefins and styrenes, wherein R² is an alkyl group having at least 2 carbon atoms.

29. (New) The catalyst as claimed in claim 5 for copolymerization of olefins and styrenes, wherein Z is aluminium.

30. (New) The catalyst as claimed in claim 6 for copolymerization of olefins and styrenes, wherein Z is aluminium.

31. (New) The catalyst as claimed in claim 2 for copolymerization of olefins and styrenes, wherein the transition metal compound (A) is represented by any of the following general formulae (2) to (6):



in which Q¹ represents a bonding group that crosslinks the two conjugated five-membered cyclic ligands (C₅H_{5-a-b}R_b⁸) and (C₅H_{5-a-c}R_c⁹); Q² represents a bonding group that crosslinks the conjugated five-membered cyclic ligand (C₅H_{5-a-d}R_d¹⁰) and the group Z¹; R⁸, R⁹, R¹⁰ and R¹¹ each represent a hydrocarbon group, a halogen atom, an alkoxy group, a silicon-containing hydrocarbon group, a phosphorus-containing hydrocarbon group, a nitrogen-containing hydrocarbon group, or a boron-containing hydrocarbon group; and a plurality of these groups, if any, may be the same or different, and may be bonded to each other to form a cyclic structure; a represents 0, 1 or 2; b, c and d each represent an integer of from 0 to 5 when a = 0, or an integer of from 0 to 4 when a = 1, or an integer of from 0 to 3 when a = 2; e is an integer of from 0 to 5; M¹ represents a transition metal of Groups 4 to 6 of the Periodic Table; M² represents a transition metal of Groups 8 to 10 of the Periodic Table; L¹ and L² each